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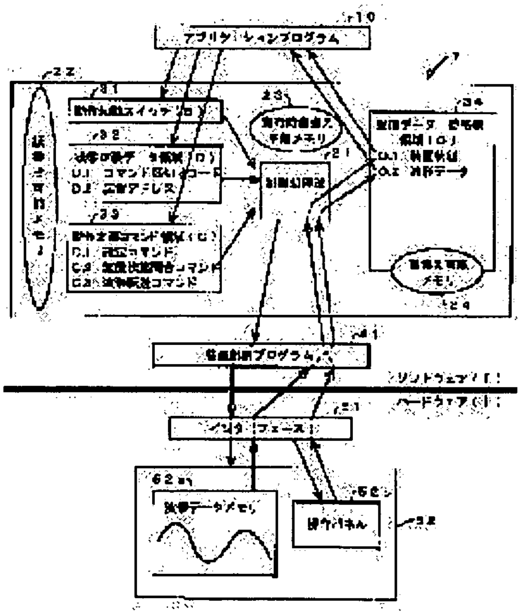
(54) SOFTWARE PART FOR REMOTE CONTROLLING ELECTRONIC MEASURING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a software part for remote controlling an electronic measuring device, enabling an operator to easily create software for remote control by eliminating the operator's complicatedness of remote control procedure description.

SOLUTION: A window for inputting data for selectively defining the remote control function to the electronic measuring device, that is, an operation defining command area 33 is opened on a display of a PC 1. When a setting command C1, a device state inquiry command C2, and a waveform transfer command C3 are written to the window by text data, software for remote control is created. When an operation starting switch 31 is set to 'true', the software for remote control is automatically executed.



LEGAL STATUS

[Date of request for examination]

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[Kind of final disposal of application other than

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CLAIMS

[Claim(s)]
[Claim 1] In the software components for electronic measuring apparatus remote control which have the remote control function of the electronic measuring apparatus in which remote control is possible as a basic function The window for inputting the data which define said remote control function as an electronic instrument alternatively (aperture), The software components for electronic measuring apparatus remote control characterized by performing automatically the remote control function which possessed the function which interprets the remote control function inputted from this window, and controls an object electronic measuring apparatus, and was written in this window.
[Claim 2] The software component for electronic measuring apparatus remote control according to claim 1 characterized by enabling it to write said remote control function in said window by text data.
[Claim 3] Said remote control function is a setup of the control panel of an electronic measuring apparatus, the readout of control-panel conditions, and a software component for electronic measuring apparatus remote control according to claim 1 or 2 characterized by including one of the wave-like transfers at least.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] About the software components for electronic measuring apparatus remote control, on a personal computer (hereafter referred to as PC), a graphical user interface development tool (Windows, VisualBasic(s) which operate on it are both the trademarks of Microsoft) is used especially for this invention, and it relates to the software components for electronic measuring apparatus remote control which perform remote control of electronic measuring apparatus, such as a digitizing oscilloscope.
[0002]
[Description of the Prior Art] As a conventional electronic measuring apparatus remote controller, PC in which the software for remote control was carried was connected to electronic measuring apparatus, such as a digitizing oscilloscope, the procedure of remote control on this PC was created, and there were some which carry out remote control of the electronic measuring apparatus according to this procedure.
[0003] In this case, said software for remote control only includes only fundamental remote control functions (transmission and reception of a command etc.), and the operator needed to describe the procedure of the remote control combined with an electronic measuring apparatus and its function, for example, control, such as a transfer of an electronic measuring apparatus prehension wave, in the self-program of PC.
[0004]
[Problem(s) to be Solved by the Invention] Generally, the remote control approach of an electronic measuring apparatus changes with a manufacturer, the class of equipment, functions to control. For this reason, when the operator was going to create on PC the software of requests, such as said remote control put together, it needed to have full knowledge of the remote control approach which changes with a manufacturer, the class of equipment, functions to control as mentioned above, the command etc. needed to be described in that program, and the technical problem were very troublesome occurred. Moreover, it was difficult for the operator with the low knowledge of software creation to create the desired software for remote control.
[0005] The purpose of this invention is by canceling the technical problem of the above mentioned conventional technique, and removing the complicatedness of remote control-procedure description from an operator to offer the software components for electronic measuring apparatus remote control which make easy creation of an operator's software for remote control.
[0006]
[Means for Solving the Problem] In the software components for electronic measuring apparatus remote control which have the remote control function of the electronic measuring apparatus which this invention can remote control as a basic function in order to attain the above mentioned purpose The window for inputting the data which define said remote control function as an electronic instrument alternatively, The function which interprets the remote control function inputted from this window, and controls an object electronic measuring apparatus is provided, and the description is in the point that the

remote control function written in this window was made to perform automatically.

[0007] According to this description, an operator can only write a desired remote control function in said window, and can create now the desired software for remote control.

[0008]

[Embodiment of the Invention] Below, with reference to a drawing, this invention is explained at a detail. Drawing 1 is the conceptual diagram of 1 operation gestalt of this invention.

[0009] Supposing the application program 10 (for example, the above mentioned known software for remote control) for remote control is installed in PC1, while displaying various kinds of icon 11a on the display 11 of PC1, window (aperture) 11b can be opened in the activation process of this program 10. With 1 operation gestalt of this invention, an operator can describe the command of the request to an electronic measuring apparatus, for example, the setting command which sets up the control panel of an electronic measuring apparatus, by text data to this window 11b (the command C1, C2 grade which are written in the definition command field 33 of drawing 2 of operation).

[0010] When an operator describes a command to this window 11b and the start switch 31 (refer to drawing 2) of operation is turned on after that, this command will be sent to an electronic measuring apparatus 2, and will be executed.

[0011] According to this operation gestalt, an operator becomes that what is necessary is just to only describe in window 11b even if it does not describe a command in an application program 10 like before, and creation of the software for remote control becomes easy.

[0012] Below, the function of this operation gestalt is explained more at a detail. Drawing 2 is the block diagram showing the function of the outline of this operation gestalt.

[0013] drawing 2 -- setting -- PC -- one -- RAM -- etc. -- from -- becoming -- a read and write -- possible -- memory -- 22 -- activation -- the time -- rewriting -- being impossible -- memory -- 23 -- and -- RAM -- etc. -- from -- becoming -- rewriting -- possible -- memory -- 24 -- having -- **** -- said -- a read and write -- possible -- memory -- 22 -- **** -- said -- an application program -- ten -- following -- actuation -- a start switch -- (-- S --) -- 31 -- a condition -- a definition -- a data area -- (-- D --) -- 32 -- and -- actuation -- a definition -- a command -- a field -- (-- C --) -- 33 -- giving a definition -- having -- **** . an operator -- PC -- one -- a top -- an application program -- ten -- rising -- operating it -- things -- a display -- 11 -- a top -- said -- actuation -- a start switch -- (-- S --) -- 31 -- a condition -- a definition -- a data area -- (-- D --) -- 32 -- and -- actuation -- a definition -- a command -- a field -- (-- C --) -- 33 -- suitably -- it can display . The control processing section 21 is the control program stored in said execution-time rewriting impossible memory 23, and mentions the actuation later by drawing 3 . Said rewritable memory 24 offers the received-data temporary storage field (O) 34. The device control program 41 can be stored in said execution-time rewriting impossible memory 23, and the function transmits and receives the command for controlling an electronic measuring apparatus 52, data, etc.

[0014] Next, an interface 51 can be constituted from GP-IB (488 to ANSI/IEEE Std1978 specification) etc., and performs signal transformation between PC1 and an electronic measuring apparatus 52 etc. Electronic measuring apparatus 52 are electronic measuring apparatus, such as a digitizing oscilloscope, for example, have wave data memory 52a, control-panel 52b, etc.

[0015] In this invention, the function to interpret the data inputted into the definition command field 33 of operation which inputs a basic remote control function and a remote control procedure (C), i.e., window 11b, and this window 11b was included in single software components.

[0016] Next, with reference to the flow chart of drawing 3 , actuation of said control processing section 21 is explained to actuation of this operation gestalt, and the Lord.

[0017] At step S1, the control processing section 21 judges whether the condition definition data D1, for example, a command break code, and the device address D2 were set as the condition definition data area (D) 32. At step S2, the control processing section 21 judges whether the command C1 which should be operated, for example, a setting command, the device-status query command C2, or the wave transfer command C3 was written in the definition command field (C) 33 of operation. Next, at step S3, it judges whether whether the start switch (S) 31 of operation having been set to true (truth) and initiation of operation were directed.

[0018] In addition, an operator performs setting-operation of said steps S1-S3, or write-in actuation to PC1. Since what is necessary is just to only write in especially said command C1 which should be operated, for example, a setting command, the device-status query command C2, or the wave transfer command C3 by text data in said window 11b shown in drawing 1 , it becomes unnecessary for an operator to have full knowledge of the contents of the application program 10, and it is easy actuation and a beginner can also create the remote control software of an electronic measuring apparatus.
[0019] If decision of said steps S1-S3 is affirmed, it progresses to step S4, and the control processing section 21 will interpret said command C1 grade written in the definition command field (C) 33 of operation, will attach the command break code D1 to the last of this, and will output this command to the electronic measuring apparatus identified with the device address D2. the -- a case -- signal aspect -- an example -- "-- an output instruction -- < -- the device address -- > -- " -- * -- IDN -- ? -- < -- a break -- a code -- > -- " -- " -- becoming . It is the instruction which an "output instruction" is prescribed by the device control program 41 here, and transmits the code of " " to an electronic measuring apparatus 52 via an interface 51. Moreover, the <device address> expresses said device address D2, ""*IDN?" expresses the command which asks an equipment name and a <break code> expresses said command break code D1.
[0020] at step S5, said command is the setting command C1, the device-status query command C2, or the wave transfer command C3 -- that decision should do -- the time of being the setting command C1 -- step S6 -- the time of the device-status query command C2 -- step S7 -- moreover, it progresses to step S8 at the time of the wave transfer command C3.
[0021] At step S6, the setting command C1 is answered and the control panel of an electronic measuring apparatus 52 is set up. At step S7, the device-status query command C2 is answered, the contents of a setting of the control panel of an electronic measuring apparatus 52 are read, and it stores in the memory area O1 of a received-data temporary storage field (O). Furthermore, at step S8, the contents of wave data memory 52a of an electronic measuring apparatus 52 are read, and it stores in a memory area O2. In step S9, an application program 10 performs after treatment, for example, the display of the contents of a setting, a wave-like display, etc. based on the contents read in the electronic measuring apparatus 52.
[0022] At step S10, decision whether the processing to the command of the last of the commands written in said definition command field (C) 33 of operation was completed is made. When this decision is negation, it returns to step S4, and processing of the following command is performed. If decision of step S10 is affirmed and progresses to step S11, at this step S11, decision whether all control of an electronic measuring apparatus finished is made, when this decision is negation, it will return to step S2 and decision whether the command which should newly operate said definition command field (C) of operation was written in will be made. And the above mentioned processing is repeated. If decision of said step S11 is affirmed, a series of above mentioned processings will be ended.
[0023] As mentioned above, according to this operation gestalt, when an operator builds the software of remote control of an electronic measuring apparatus into an application program, what is necessary is just coming to write a command in a definition command field (inside of a window) of operation beforehand, and it becomes unnecessary to get to know the control procedure or its control approach of equipment.
[0024]
[Effect of the Invention] Since the desired software for remote control can be created only by writing a desired remote control function in a window according to this invention so that clearly from the above explanation, it becomes unnecessary for an operator to write the procedure which needs troublesome and special knowledge in an application program.

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TECHNICAL FIELD

[Field of the Invention] About the software components for electronic measuring apparatus remote control, on a personal computer (hereafter referred to as PC), a graphical user interface development tool (Windows, VisualBasic(s) which operate on it are both the trademarks of Microsoft) is used especially for this invention, and it relates to the software components for electronic measuring apparatus remote control which perform remote control of electronic measuring apparatus, such as a digitizing oscilloscope.

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PRIOR ART

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[0003] In this case, said software for remote control only includes only fundamental remote control functions (transmission and reception of a command etc.), and the operator needed to describe the procedure of the remote control combined with an electronic measuring apparatus and its function, for example, control, such as a transfer of an electronic measuring apparatus prehension wave, in the self-program of PC.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Generally, the remote control approach of an electronic measuring apparatus changes with a manufacturer, the class of equipment, functions to control. For this reason, when the operator was going to create on PC the software of requests, such as said remote control put together, it needed to have full knowledge of the remote control approach which changes with a manufacturer, the class of equipment, functions to control as mentioned above, the command etc. needed to be described in that program, and the technical problem were very troublesome occurred. Moreover, it was difficult for the operator with the low knowledge of software creation to create the desired software for remote control.
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MEANS

[Means for Solving the Problem] In the software components for electronic measuring apparatus remote control which have the remote control function of the electronic measuring apparatus which this invention can remote control as a basic function in order to attain the above mentioned purpose The window for inputting the data which define said remote control function as an electronic instrument alternatively, The function which interprets the remote control function inputted from this window, and controls an object electronic measuring apparatus is provided, and the description is in the point that the remote control function written in this window was made to perform automatically.
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h c g cg b eb cg e e

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[0018] In addition, an operator performs setting-operation of said steps S1-S3, or write-in actuation to PC1. Since what is necessary is just to only write in especially said command C1 which should be operated, for example, a setting command, the device-status query command C2, or the wave transfer command C3 by text data in said window 11b shown in drawing 1 , it becomes unnecessary for an operator to have full knowledge of the contents of the application program 10, and it is easy actuation and a beginner can also create the remote control software of an electronic measuring apparatus.
[0019] If decision of said steps S1-S3 is affirmed, it progresses to step S4, and the control processing section 21 will interpret said command C1 grade written in the definition command field (C) 33 of operation, will attach the command break code D1 to the last of this, and will output this command to the electronic measuring apparatus identified with the device address D2. the -- a case -- signal aspect -- an example -- "-- an output instruction -- < -- the device address -- > -- " -- * -- IDN -- ? -- < -- a break -- a code -- > -- " -- " -- becoming . It is the instruction which an "output instruction" is prescribed by the device control program 41 here, and transmits the code of " " to an electronic measuring apparatus 52 via an interface 51. Moreover, the <device address> expresses said device address D2, ""*IDN?" expresses the command which asks an equipment name and a <break code> expresses said command break code D1.
[0020] at step S5, said command is the setting command C1, the device-status query command C2, or the wave transfer command C3 -- that decision should do -- the time of being the setting command C1 -- step S6 -- the time of the device-status query command C2 -- step S7 -- moreover, it progresses to step S8 at the time of the wave transfer command C3.
[0021] At step S6, the setting command C1 is answered and the control panel of an electronic measuring apparatus 52 is set up. At step S7, the device-status query command C2 is answered, the contents of a setting of the control panel of an electronic measuring apparatus 52 are read, and it stores in the memory area O1 of a received-data temporary storage field (O). Furthermore, at step S8, the contents of wave data memory 52a of an electronic measuring apparatus 52 are read, and it stores in a memory area O2. In step S9, an application program 10 performs after treatment, for example, the display of the contents of a setting, a wave-like display, etc. based on the contents read in the electronic measuring apparatus 52.
[0022] At step S10, decision whether the processing to the command of the last of the commands written in said definition command field (C) 33 of operation was completed is made. When this decision is negation, it returns to step S4, and processing of the following command is performed. If decision of step S10 is affirmed and progresses to step S11, at this step S11, decision whether all control of an electronic measuring apparatus finished is made, when this decision is negation, it will return to step S2

and decision whether the command which should newly operate said definition command field (C) of operation was written in will be made. And the above mentioned processing is repeated. If decision of said step S11 is affirmed, a series of above mentioned processings will be ended.
[0023] As mentioned above, according to this operation gestalt, when an operator builds the software of remote control of an electronic measuring apparatus into an application program, what is necessary is just coming to write a command in a definition command field (inside of a window) of operation beforehand, and it becomes unnecessary to get to know the control procedure or its control approach of equipment.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the outline of a system in which this invention is applied.
[Drawing 2] It is the block diagram showing the function of 1 operation gestalt of this invention.
[Drawing 3] It is the flow chart which shows actuation of this operation gestalt.
[Description of Notations]
1 [... A display, 11a / ... An icon, 11b / ... A window, 21 / ... The control processing section, 31 / ... A start switch of operation, 32 / ... A condition definition data area, 33 / ... A definition command field of operation 34 / ... A received-data temporary storage field, 41 / ... Device control program] ... 2 PC (personal computer), 52 ... An electronic measuring apparatus, 10 ... An application program, 11

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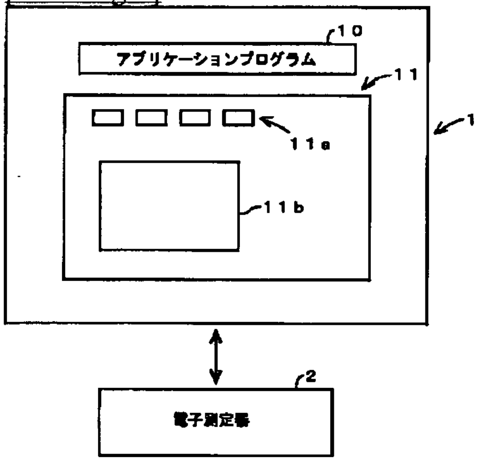
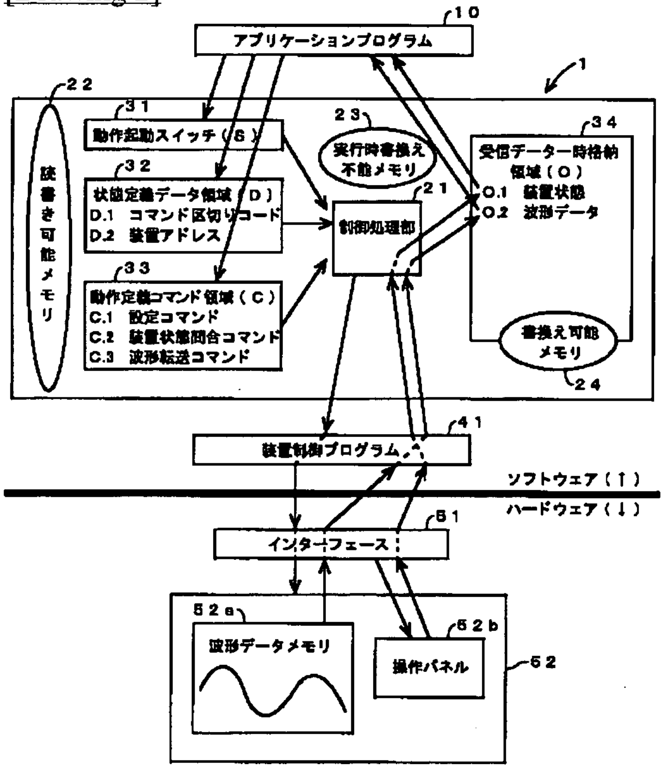
DRAWINGS

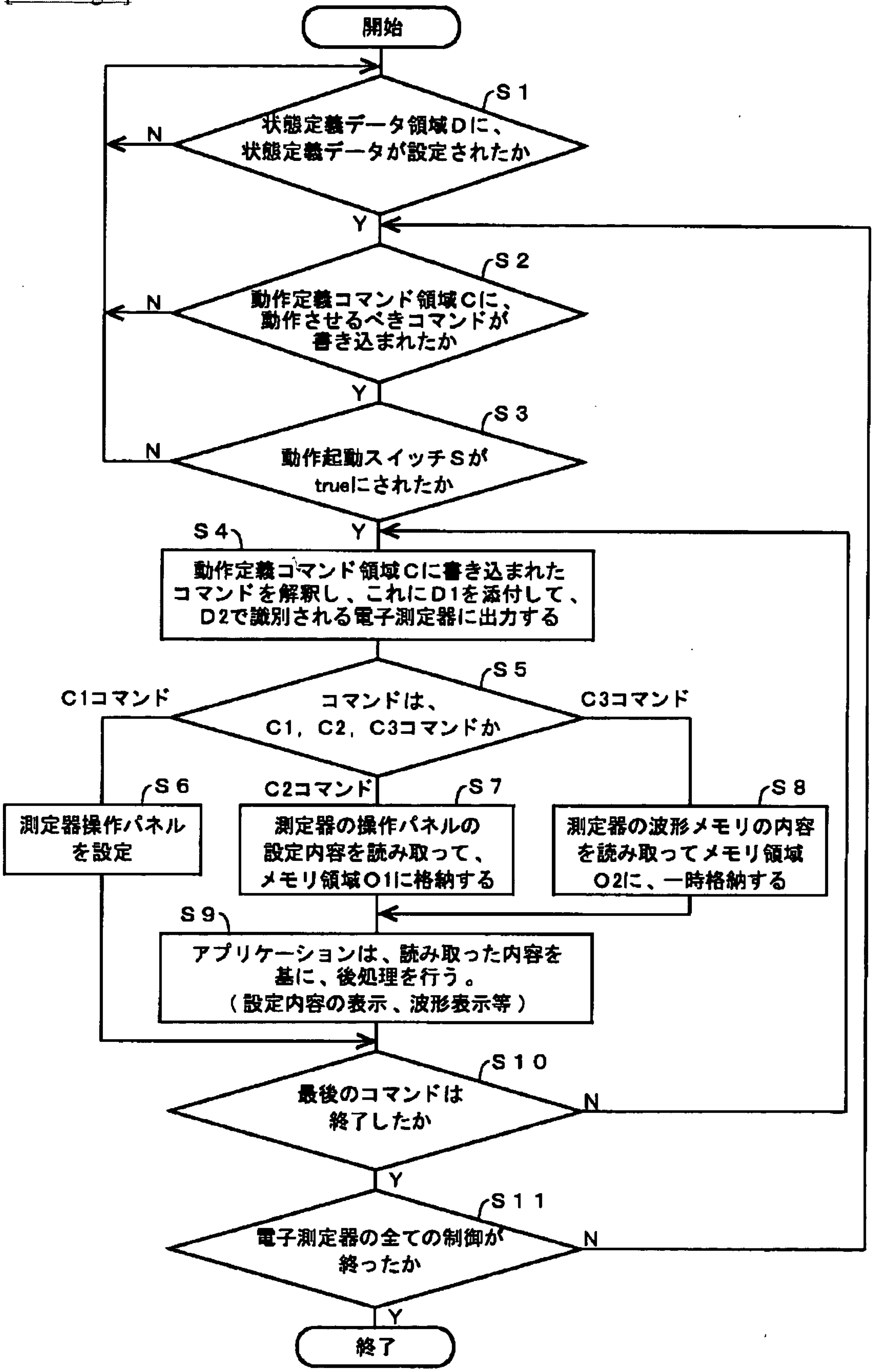
[Drawing 1]


10
アプリケーションプログラム
11
11a
11b
1
2
電子測定器

[Drawing 2]


10
アプリケーションプログラム
1
22
読書き可能メモリ
31
動作起動スイッチ（S）
32
状態定義データ領域（D）
D.1 コマンド区切りコード
D.2 装置アドレス
33
動作定義コマンド領域（C）
C.1 設定コマンド
C.2 装置状態問合コマンド
C.3 波形転送コマンド
23
実行時書換え不能メモリ
21
制御処理部
34
受信データ一時格納領域（O）
O.1 装置状態
O.2 波形データ
書換え可能メモリ
24
41
装置制御プログラム
ソフトウェア（↑）
ハードウェア（↓）
51
インターフェース
52a
波形データメモリ
52b
操作パネル
52

[Drawing 3]


開始
S1
状態定義データ領域Dに、
状態定義データが設定されたか
N
Y
S2
動作定義コマンド領域Cに、
動作させるべきコマンドが
書き込まれたか
N
Y
S3
動作起動スイッチSが
trueにされたか
N
Y
S4
動作定義コマンド領域Cに書き込まれた
コマンドを解釈し、これにD1を添付して、
D2で識別される電子測定器に出力する
S5
C1コマンド
コマンドは、
C1，C2，C3コマンドか
C3コマンド
C2コマンド
S6
測定器操作パネル
を設定
S7
測定器の操作パネルの
設定内容を読み取って、
メモリ領域O1に格納する
S8
測定器の波形メモリの内容
を読み取ってメモリ領域
O2に、一時格納する
S9
アプリケーションは、読み取った内容を
基に、後処理を行う。
（設定内容の表示、波形表示等）
S10
最後のコマンドは
終了したか
N
Y
S11
電子測定器の全ての制御が
終ったか
N
Y
終了

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